

**REMARKS**

Reconsideration of the application is respectfully requested in view of the foregoing amendments and following remarks. Upon entry of this amendment, claims 1-4, 17-19, and 25-32 remain in the application.

**Rejection under 35 USC §102**

The Examiner rejected claims 17 and 19 as anticipated over Hoarty, U.S. Patent No. 5,883,661 ("Hoarty"). The Examiner rejected claim 17 as anticipated over Adams, U.S. Patent No. 6,378,130 ("Adams").

***Claim 17***

Amended claim 17 recites "a proxy server computer interposed between the video server and the plural clients ... performing a method comprising ... assigning a first transmission channel ... instructing the video server to transmit on ... and ... instructing the first client to receive on the first transmission channel." Specifically, amended claim 17 recites,

17. (Once Amended) In a video-on-demand system including plural clients receiving on-demand video originating from at least one video server, a proxy server computer interposed between the video server and the plural clients, the proxy server performing a method comprising:

- assigning a first transmission channel to a first client to transmit an on-demand video thereto;
- assigning a second transmission channel to a second client to transmit an on-demand video thereto;
- instructing the video server to transmit on the first transmission channel;
- instructing the first client to receive on the first transmission channel;
- instructing the video server to transmit on the second transmission channel; and
- instructing the second client to receive on the second transmission channel.

For example, the Application states with emphasis,

One of the difficulties with the proliferation of competing video-on-demand applications is the lack of an industry standard communications protocol. The protocol controls the

communication between the video-on-demand server and the various video-on-demand clients on the interactive television network. The challenge in a video-on-demand application is that it must be capable of handling **not only the download of digital video data to the client, but also the transmission of control data to and from the client relating to system administration (e.g. channel assignment data, billing information, etc.).**

Currently, most video-on-demand servers use a proprietary communications protocol unique to that video-on-demand server. Problems arise when the protocols used to control the video-on-demand servers aren't understood (are incompatible with) the protocols supported by the various video-on-demand clients. *Page 2 line 20, through page 3 line 4.*

Various embodiments of the present invention redress these shortcomings and related drawbacks of prior art video-on-demand servers by **interposing a middle tier in the typical interactive video system configuration in the form of one or more proxy servers to provide, among other advantages, protocol integration, increased reliability, recoverability, scalability and performance, and feature enhancement.** *Page 3, lines 16-21.*

Referring to Figure 1, an exemplary interactive entertainment system 10 according to one embodiment of the present invention includes an entertainment head-end 12, one or more proxy servers 24, and one or more client terminals 14 intercoupled through a network 16. **The proxy servers 24 are computers interposed in a middle tier between the head-end 12 and the client terminals 14 to perform various interactive video system control and user interface (UI) functions.** *Page 5, lines 8-13 (Emphasis added).*

One implementation of the present invention includes **one or more proxy servers interposed between one or more video-on-demand servers and one or more video-on-demand clients.** The proxy server includes a protocol translation component, a user interface component, **a channel management component**, a loadsharing component, a failover component and a security component. *Page 4, lines 17-21.*

The channel management component manages the assignment of transmission channels to video-on-demand clients. *Page 4, lines 26-27.*

Referring to the bottom portion of Figure 3, the illustrated implementation of the present invention **interposes a proxy server**

**24 between the client terminal 14 and the video-on-demand server 30. Page 7, lines 1-8.**

Configured in this way, **the back-end video-on-demand servers 30 may be used more as a commodity available to one or more proxy servers 24** in the delivery of video-on-demand services to the client terminal 14.

Moreover, the proxy server 24 can perform various administrative management functions, such as managing channel assignments for video-on-demand transmission.

*Page 8, lines 1-7.*

Moreover, **the proxy server 24 can perform** various administrative management functions, such as **managing channel assignments** for video-on-demand transmission.

Here a distinction should be drawn between two types of "channels." The first, termed a "transmission channel," refers to an actual frequency channel (e.g. 52 - 58 MHz) that is used to relay programming from the head-end 12 to the client terminal 14 over the network 16. The second, termed a "viewer channel," refers to the moniker (e.g. MSNBC, CNN, GAME, CHAT, VIDEO) by which a user distinguishes different programming. **The mapping between viewer and transmission channels is determined by the system, e.g. proxy server 24.** *Page 8, lines 1-10.*

Data indicating the assignment of transmission channels-to-viewer channels is periodically **sent as control data between the proxy 24 and the client terminal 14.** *Page 8, lines 18-20.*

The proxy server then identifies an available transmission channel and instructs the client terminal to tune to that channel. (This retuning is transparent to the viewer, whose channel selection remains at the VIDEO viewer channel.) The proxy similarly instructs the video server to resume transmission of the requested video from the point of interruption, this time modulating it on the newly-assigned channel. *Page 9, line 1-7.*

The art of record fails to teach or suggest "a proxy server computer interposed between the video server and the plural clients ... performing a method comprising ... assigning a first transmission channel ... instructing the video server to transmit on ... and ... instructing the first client to receive on the first transmission channel." For example, the Examiner directs Applicants to the following passages in Hoarty,

Similarly, unless the context otherwise requires, the term "information service" includes any service capable of being furnished to a television viewer having an interface permitting (but not necessarily requiring) interaction with a facility of the broadband system provider, including but not limited to an interactive information service, video-on-demand, local origination service, community event service, regular broadcast service, etc. Col. 4, lines 29-36.

The home interface controller 42 requests interactive service upon an interactive channel selection by the user. The system manager 22 will assign a carrier frequency to the requesting subscriber at the home interface controller 42. The home interface controller 42 is informed of the assigned carrier frequency and tunes the television set-top 40 to the assigned channel. Two-way interactive communications can continue between the home interface controller and the assigned interactive element. Col. 10, lines 33-41.

The communications gateway 26 acts as a translator between the IHOP 200 and the headend LAN connecting the distributed processes of the system manager 22. The communications gateway 26 translates the IHOP address from an individual user into a global Internet Protocol (IP) address for addressing ethernet data packets within the headend LAN. IP is part of TCP/IP. Col. 14, lines 49-55.

The recited passages in Hoarty fail to teach or suggest "a proxy server computer interposed between the video server and the plural clients ... performing a method comprising ... assigning a first transmission channel ... instructing the video server to transmit on ... and ... instructing the first client to receive on the first transmission channel." Rather, in Hoarty there is no proxy server computer interposed between the video server and the plural clients assigning channels and instructing the video server to transmit on and the first client to receive on the assigned channels. Thus Hoarty fails to teach or suggest amended claim 17.

Additionally, the Examiner asserts that claim 17 is anticipated by Adams. For example, the Examiner directs Applicants to the following passages in Adams,

This invention relates to a server interconnect architecture for supplying Broadband On-Demand Services (for example, Video-On-Demand (VOD), WEB browsing, etc.) in a communication network to residential or business communication services subscribers. *Col. 1, lines 7-11.*

Each of the media servers 76, 84, 91, and 92 contains a connection management agent 77, 85, 93 and 95 respectively. These connection management agents communicate with each other through control bus 106. The control bus 106 also connects to digital switch 17 so that the connection management agents may exchange control messages (IP datagrams) with the subscriber terminals. The operation of connection management agents will be described hereinafter with reference to FIG. 7. *Col. 9, lines 24-32.*

The operation of the connection management agents with the subscriber terminals, to provide a requested media asset to a requesting subscriber terminal is shown in the logical operations of FIG. 7. The operations in the left column of FIG. 7 are performed by the connection management agent and the operations in the right column are performed by a given subscriber terminal requesting a particular media asset. The logical operation begins with the subscriber terminal in operation 110 requesting a media asset, such as a video program, or web page, and sending this request as an Internet protocol datagram over a reverse data channel back through the ICG 18 to digital switch 17 to the connection management agents 74 (FIG. 4). Each connection management agent receives the request for the media asset at receive module 112. Analysis operation 114 analyzes availability of the media asset at its server and the loading, or workload, of the various media servers in the network.  
*Col. 9 line 59 through col. 10, line 8.*

The recited passages in Adams fail to teach or suggest “a proxy server computer interposed between the video server and the plural clients ... performing a method comprising ... assigning a first transmission channel ... instructing the video server to transmit on ... and ... instructing the first client to receive on the first transmission channel.” Rather, in Adams, a media server inside the head-end (e.g., Adams at Figure 1, items 2 and 16) contains a connection manager (e.g., Adams at Figure 4, item 74) that manages channel assignment. Adams fails to teach or suggest “a proxy server computer interposed between the video server and the plural clients ... performing a method comprising ... assigning a first transmission channel ... instructing the video server to transmit on ... and ... instructing the first client to receive on the first transmission channel.” Thus Adams fails to teach or suggest amended claim 17.

For at least these reasons amended claim 17 is in condition for allowance. Dependent claims 18-19 contain additional language that makes them separately patentable and Applicants do not agree with the Office’s arguments against these dependent claims. However, since claims 18-19 depend

from amended claim 17, they should be allowed for at least the reasons stated for claim 17. Such action is respectfully requested.

### **Rejection under 35 USC §103**

The Examiner rejected claims 1-4 as obvious over Hoarty in view of Davis, U.S. Patent No. 5,898,387 ("Davis"). The Examiner rejected claim 18 as obvious over Hoarty in view of Inoue, U.S. Patent No. 5,729,280 ("Inoue"). Reconsideration is respectfully requested.

### ***Claim 1***

Amended claim 1 recites plural control protocols comprising "control data transmitted to control video-on-demand ... including a proxy interposed between the server and the client ... for translating between the first and second protocols." Specifically, amended claim 1 recites,

1. (Once Amended) A video system comprising a video-on-demand server and a remote client, the server employing a first protocol comprising control data transmitted to control video-on-demand, the client employing a second protocol comprising control data transmitted to control video-on-demand, the system further including a proxy interposed between the server and the client, the proxy including means for translating between the first and second protocols, wherein the server and client can communicate control data through the proxy even if the control data in the first and second protocols are different, and wherein change to either the server or client protocol can be accommodated by a change to the proxy rather than to the client or server, respectively.

For example, the Application states with emphasis,

One of the difficulties with the proliferation of competing video-on-demand applications is the lack of an industry standard communications protocol. **The protocol controls the communication** between the video-on-demand server and the various video-on-demand clients on the interactive television network. The challenge in a video-on-demand application is that it must be capable of handling **not only the download of digital video data to the client, but also the transmission of control data to and from the client** relating to system administration (e.g. channel assignment data, billing information, etc.).

Currently, most video-on-demand servers use a proprietary communications protocol unique to that video-on-demand server. Problems arise when the **protocols used to control the video-on-**

**demand servers aren't understood (are incompatible with) the protocols supported by the various video-on-demand clients.**

*Page 2 line 20, through page 3 line 4.*

Referring to Figure 1, an exemplary interactive entertainment system 10 according to one embodiment of the present invention includes an entertainment head-end 12, one or more proxy servers 24, and one or more client terminals 14 intercoupled through a network 16. **The proxy servers 24 are computers interposed in a middle tier between the head-end 12 and the client terminals 14 to perform various interactive video system control and user interface (UI) functions.** *Page 5, lines 8-13 (Emphasis added).*

One implementation of the present invention includes **one or more proxy servers interposed between one or more video-on-demand servers and one or more video-on-demand clients.** The proxy server includes **a protocol translation component**, a user interface component, a channel management component, a loadsharing component, a failover component and a security component.

**The translation component translates, if necessary, the communication protocols used by the video-on-demand server and video-on-demand client,** and fixes -- on-the-fly -- certain errors in those protocols. *Page 4, lines 1-8.*

Referring to the bottom portion of Figure 3, the illustrated implementation of the present invention interposes a proxy server 24 between the client terminal 14 and the video-on-demand server 30. *Page 7, lines 1-8.*

Another function of the illustrated proxy server is to effect protocol translation between the protocol employed by the client, and that expected by the server. As noted, there are a wide variety of such protocols. While new video-on-demand systems are commonly installed with a consistent client/server protocol, subsequent events can change this. For example, by acquisition or otherwise, an operator of a video-on-demand system may inherit client terminals from another (non-compatible) system. The provision of protocol translation in the proxy server facilitates integration of such non-compatible client terminals into the system. Similarly, upgrades to a video-on-demand system may entail substitution of a video server employing a different control protocol. Again, protocol translation by the proxy server facilitates integration of such new equipment. *Page 10, lines 11-21.*

The art of record fails to teach or suggest plural control protocols comprising “control data transmitted to control video-on-demand ... including a proxy interposed between the server and the client ... for translating between the first and second protocols.” For example, the Examiner directs Applicants to the following passages in Hoarty,

Similarly, unless the context otherwise requires, the term “information service” includes any service capable of being furnished to a television viewer having an interface permitting (but not necessarily requiring) interaction with a facility of the broadband system provider, including but not limited to an interactive information service, video-on-demand, local origination service, community event service, regular broadcast service, etc.  
Col. 4, lines 29-36.

The communications gateway 26 acts as a translator between the IHOP 200 and the headend LAN connecting the distributed processes of the system manager 22. *The communications gateway 26 translates the IHOP address from an individual user into a global Internet Protocol (IP) address for addressing ethernet data packets* within the headend LAN. IP is part of TCP/IP.  
Col. 14, lines 49-55.

The recited passages in Hoarty fail to teach or suggest plural control protocols comprising “control data transmitted to control video-on-demand ... including a proxy interposed between the server and the client ... for translating between the first and second protocols.” Rather, the gateway in Hoarty “translates the IHOP address from an individual user into a global Internet Protocol (IP) address for addressing ethernet data packets.” There are simply no first and second protocols of control data for controlling a VOD server, nor any translation between same.

Next, the Examiner directs Applicants to the following passage in Davis,

The utility gateway enclosure according to the present invention also accommodates multiple interchangeable local area network (LAN) interface cards and wide area network (WAN) interface cards, such that multiple in-home communications media are simultaneously supported and can be changed simply by inserting a different LAN or WAN interface card. As a result, multiple and interchangeable LAN and WAN media are supported by simply changing electronic cards inserted into the slots of the utility gateway enclosure. Moreover, the gateway enclosure according to



the present invention simultaneously supports multiple LAN media. *Col. 1, line 65, through col. 2, line 9.*

WAN transmissions between the headend terminal and the utility gateway according to the present invention may be, for example, broadband, LLEO, VHF/Telephony, or radio frequency transmissions. LAN or in-home transmissions between the downstream user terminal and the utility gateway according to the present invention may be, for example, hardwired, radio frequency, CEBus PLC (power line connector), or Echleon PLC transmissions. *Col. lines 38-45.*

The recited passages in Davis fail to teach or suggest plural control protocols comprising “control data transmitted to control video-on-demand ... including a proxy interposed between the server and the client ... for translating between the first and second protocols.” Rather, the gateway in Davis simply translates between different networks for moving data--broadband, LLEO, VHF/Telephony, or radio frequency transmissions. There are simply no first and second protocols of control data for controlling a VOD server, nor any translation between same.

Thus, a Hoarty-Davis combination fails to teach or suggest plural control protocols comprising “control data transmitted to control video-on-demand ... including a proxy interposed between the server and the client ... for translating between the first and second protocols.”

For at least this reason claim 1 is in condition for allowance. Dependent claims 2-4 contain additional language that makes them separately patentable and Applicants do not agree with the Office’s arguments against these dependent claims. However, since claims 2-4 depend from amended claim 1, they should be allowed for at least the reasons stated for claim 1. Such action is respectfully requested.

### ***Claim 18***

The Examiner rejected claim 18 as obvious over Hoarty in view of Inoue. However, since claim 18 depends from amended claim 17, claim 18 is allowable over a Hoarty-Inoue combination if amended claim 17 is allowable over the Hoarty-Inoue combination.

Amended claim 17 recites “a proxy server computer interposed between the video server and the plural clients ... performing a method comprising ... assigning a first transmission channel ... instructing the video server to transmit on ... and ... instructing the first client to receive on the first transmission channel.”

The art of record fails to teach or suggest a “translating between the first and second protocols, wherein the server and client can communicate control data through the proxy even if the control data in the first and second protocols are different.” For example, the Examiner directs Applicants to the following passages in Hoarty and Inoue,

Call set-up is initiated by a small program in the home interface controller 42 which keeps track of the channel the user is watching. The channels are broken into bands where, for instance, channels two through 70 are assigned regular TV programming both off-air TV channels as well as cable channels such as MTV, HBO, CNN, etc. The band above this broadcast band uses channels 71 to 90, for instance, for interactive services where a user is assigned one of these channels only during the duration of that user's interaction with the interactive TV system (i.e.--while looking up a restaurant in the entertainment guide, or while watching a movie, etc.). A user may tune from a broadcast channel (e.g.--ch. 37 CNN) to an interactive service virtual channel (e.g.--ch. 71 for the Movie Guide or ch. 307 for an infomercial). When the user tunes out of the broadcast channel to any channel number designated for interactive service, the small program in the home interface controller sends a signal to the system manager at the headend to initiate call set-up. *Hoarty at col. 13, lines 1-19.*

A video signal receiver receives a plurality of video channels simultaneously carrying, offset by a transmission interval, a single video program, selects one channel from which to obtain the program for display to a user, and achieves a pause function in the display of the transmitted video program by temporarily storing a segment of the video program equal to the length of the transmission interval and obtaining the remainder of the program at a later time from the same or another channel. *Inoue, Abstract.*

For all the reasons stated above in the discussion of amended claim 17, Hoarty fails to teach or suggest “a proxy server computer interposed between the video server and the plural clients ... performing a method comprising ... assigning a first transmission channel ... instructing the video server to transmit on ... and ... instructing the first client to receive on the first transmission channel.”

Next, Inoue fails to teach or suggest “a proxy server computer interposed between the video server and the plural clients ... performing a method comprising ... assigning a first transmission channel ... instructing the video server to transmit on ... and ... instructing the first client to receive on the first transmission channel.” Rather, Inoue fails to teach or suggest any method at all for

assigning transmission channels to specific clients. In Inoue, a client station can tune to any of the channels providing the same content at different time intervals (e.g., col. 7, lines 5-20). However Inoue fails to teach or suggest “a proxy server computer interposed between the video server and the plural clients ... performing a method comprising ... assigning a first transmission channel ... instructing the video server to transmit on ... and ... instructing the first client to receive on the first transmission channel.”

Since neither Hoarty nor Inoue teach or suggest such a proxy server or the recited method, a Hoarty-Inoue combination also fails to teach amended claim 17. Since claim 18 depends from claim 17, claim 18 is also allowable. Such action is respectfully requested.

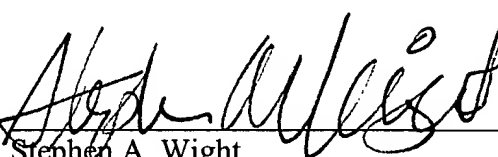
## CONCLUSION

The claims in their present form should now be allowable. Such action is respectfully requested.

Respectfully submitted,

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**Marked-up Version of Amended Claims  
Pursuant to 37 C.F.R. §§ 1.121(b)-(c)**

(Once Amended) A video system comprising a video-on-demand server and a remote client, the server employing a [server communications] first protocol comprising control data transmitted to control video-on-demand, the client employing a [client communications] second protocol comprising control data transmitted to control video-on-demand, the system further including a proxy interposed between the server and the client, the proxy including means for translating between the [server and client communications] first and second protocols, wherein the server and client can communicate control data through the proxy even if the control data in the first and second protocols [server and client protocols] are different, and wherein change to either the server or client protocol can be accommodated by a change to the proxy rather than to the client or server, respectively.

2. (Once Amended) The system of claim 1 wherein the proxy further includes means for translating between at least one of said [client and server communications] first and second protocols and a third protocol comprising control data transmitted to control video-on-demand and different from said first and second [client and server communications] protocols, wherein the same proxy can be used in different server/client environments.

3. The system of claim 1 wherein the proxy includes means for ameliorating aberrant behavior in at least one of said server or client.

4. The system of claim 3 wherein the proxy includes means for detecting a predetermined input communication in an input protocol, and issuing an output communication in an output protocol that does not exactly correspond to the input communication.

17. (Once Amended) In a video-on-demand [application]system including plural clients receiving on-demand video[coupled to] originating from at least one video server, [through an] a proxy server computer interposed between the video server and the plural clients, the proxy server performing [infrastructure, the infrastructure defining plural transmission channels, the infrastructure further including an intermediary processor,] a method comprising:

assigning a first transmission channel to a first client to transmit an on-demand video thereto;  
assigning a second transmission channel to a second client to transmit an on-demand video thereto; [and

employing the intermediary processor to manage said assignment of channels to clients.]

**instructing the video server to transmit on the first transmission channel;**

**instructing the first client to receive on the first transmission channel;**

**instructing the video server to transmit on the second transmission channel; and**

**instructing the second client to receive on the second transmission channel.**

18. (Once Amended) The method of claim 17, **wherein the proxy server** [including employing the intermediary processor to] reassigns the first client to a third transmission channel at a point between the beginning and end of the first client's on-demand video, so as to manage channel resources.

20. (Once Amended) The method of claim 17 wherein the clients and server employ different communication protocols, and the **proxy server** [intermediary processor] effects conversion between said protocols.

**25. (New) In a video-on-demand system comprising plural video-on-demand clients requesting video programs according to a first video server control protocol, and a head-end serving video programs according to a second video server control protocol, interposing a proxy server computer between the head-end and the plural clients, the proxy server performing a method comprising:**

**from a client, receiving control data representing a video server control action in the first protocol;**

**translating the received control data into control data representing a video control action in the second control protocol; and**

**sending the translated control data to the head-end.**

26. (New) The system of claim 25, further comprising plural video-on-demand clients requesting video programs according to the second video server control protocol and the method further comprises:

from a second client, receiving control data representing a video server control action in the second protocol; and

sending to the head-end, the control data received from the second client.

27. (New) The system of claim 25, further comprising a second video server at the head-end, wherein the second video server serves video programs according to the first video server control protocol, and the method further comprises:

from a second client, receiving control data representing a video server control action in the first protocol; and

sending to the second video server, the control data received from the second client.

28. (New) A computer-readable medium comprising instructions for performing a method comprising:

receiving control data from a client requesting video programs according to a first video-on-demand server control protocol;

translating the received control data into control data representing a video control action in a second video-on-demand server control protocol; and

sending the translated control data to a head-end serving video-on-demand programs according to the second video-on-demand server control protocol.

29. (New) The computer readable medium of claim 28, wherein the method further comprises:

receiving control data from a second client requesting video programs according to the second video-on-demand server control protocol; and

sending the control data to the head-end serving video-on-demand programs according to the second video-on-demand server control protocol.

30. (New) The computer readable medium of claim 28, wherein the method further comprises:

receiving control data from a second client requesting video programs according to the first video-on-demand server control protocol; and

sending the control data to a second video server at the head-end, wherein the second video server serves video-on-demand programs according to the first video-on-demand server control protocol.

31. (New) A computer-readable medium comprising instructions for performing a method comprising:

receiving from a first client, control data comprising on-demand video control;

assigning a first transmission channel to the first client;

sending to a head-end, control data comprising instructions to transmit on-demand video on the first transmission channel;

sending to the first client, control data comprising instructions to receive on-demand video on the first transmission channel;

receiving from a second client, control data comprising on-demand video control;

assigning a second transmission channel to the second client;

sending to the head-end, control data comprising instructions to transmit on-demand video on the second transmission channel; and

sending to the second client, control data comprising instructions to receive on-demand video on the second transmission channel.

32. (New) A method for assigning video-on-demand transmission channels to transmit on-demand video programming from a head-end to plural clients, the method performed by a proxy server computer receiving and sending control data, the method comprising:

receiving from a first client, control data comprising on-demand video control;

assigning a first transmission channel to the first client;

sending to the head-end, control data comprising instructions to transmit on-demand video on the first transmission channel;



\_\_\_\_\_ sending to the first client, control data comprising instructions to receive on-demand video on the first transmission channel;

\_\_\_\_\_ receiving from a second client, control data comprising on-demand video control;

\_\_\_\_\_ assigning a second transmission channel to the second client;

\_\_\_\_\_ sending to the head-end, control data comprising instructions to transmit on-demand video on the second transmission channel; and

\_\_\_\_\_ sending to the second client, control data comprising instructions to receive on-demand video on the second transmission channel.